FINAL INSPECTION, MAINTENANCE AND MONITORING PLAN

BAILEY SUPERFUND SITE
ORANGE COUNTY, TEXAS

September 1997

727931-11000

Prepared by:

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125191

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SECTION 1

1.0 INTRODUCTION

The purpose of this Inspection, Maintenance and Monitoring Plan (IMMP) is to outline procedures to verify that the remedial action for the Bailey Superfund Site (BSS), as designed and as constructed, is maintained over time.

After the final visual inspection of the remedial action at the site has occurred and the closeout of the construction contract has been completed, the maintenance and monitoring program will be initiated as long as access to the private property can be obtained and/or maintained. The maintenance and monitoring program for the site includes: site inspections, site maintenance, and submission of regularly scheduled reports. The EPA shall review the remedial action at least every five years and will modify the requirement that the IMMP continue, as appropriate.

The IMMP will be enacted to verify that the site complies with applicable or relevant and appropriate requirements (ARARs) for long-term maintenance and monitoring after remedial action activities are completed. The applicable ARARs contained in the Resource Conservation and Recovery Act (40 CFR 264.117, 40 CFR 264.228, 264.310) are:

a. Maintenance of the integrity and effectiveness of the final cover, including making repairs to the cap to correct the effects of settlement, subsidence, erosion, or ther similar events; and

b. Prevent run-on and run-off from eroding or otherwise damaging the final cover.

SECTION 2

2.0 SITE INSPECTION

The Bailey Site Settlors Committee (BSSC), or their authorized representative, will make visual inspections of the site after completion of the final remedy.

2.1 Inspection Frequency

Inspections of the grounds, gas vents, fences, site access bridge, signs and roads will be performed on a quarterly basis for the first year after completion of the remediation effort. This frequency complies with the recommendations derived from the settlement analysis performed by the design Engineer as part of the design process. The maximum settlement per unit time is anticipated to occur during construction and within the first year after completion of construction. An additional consideration is the status of the vegetative seeding placed on the cap system to prevent soil erosion. The first year after construction completion is important in establishing good vegetative growth and cover.

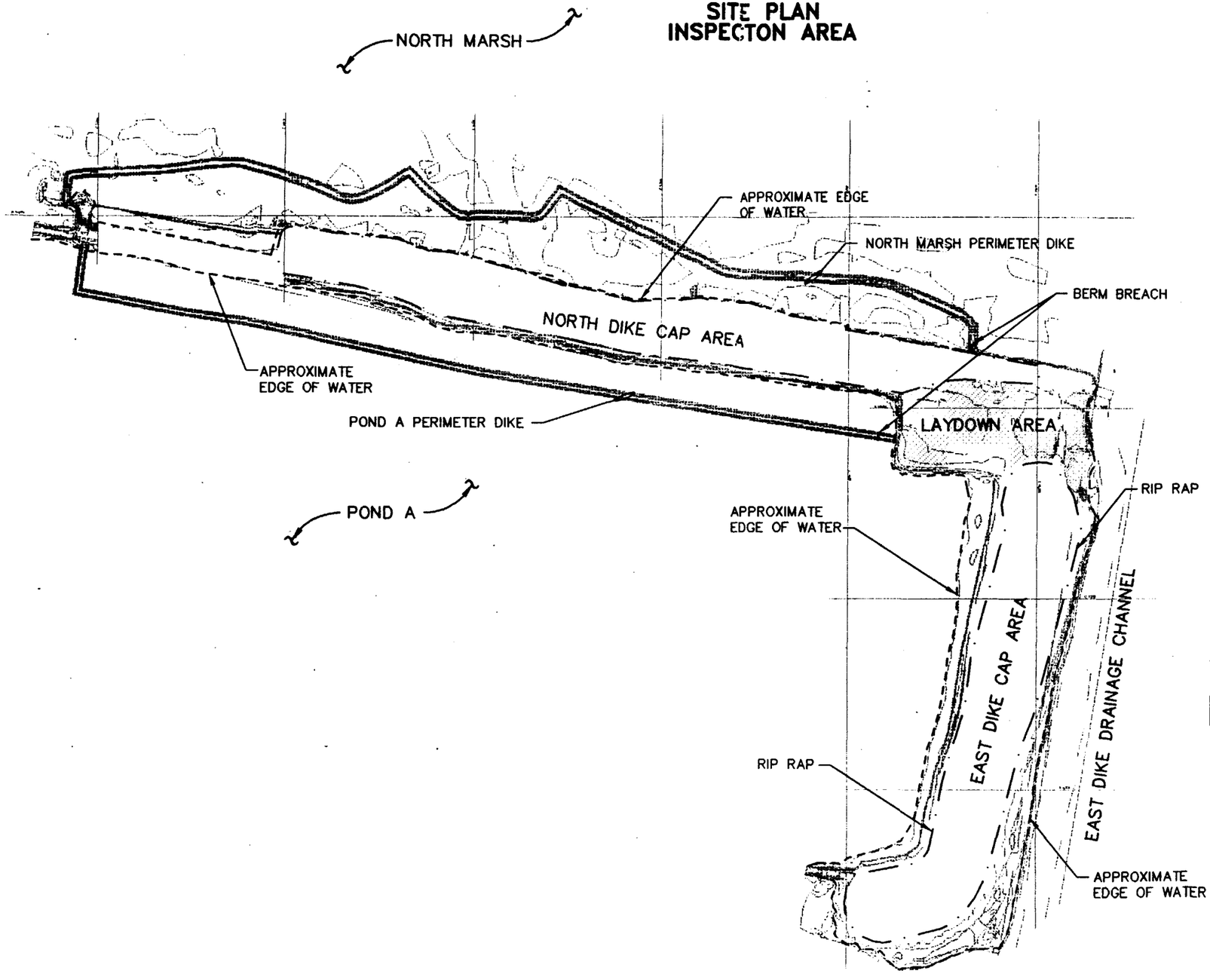
Inspections will be performed once per year for years two through five after completion of construction. The frequency of these inspections will decrease after five years according to the frequency specified in Tables 6.1 - 6.4 in Section 6.0. The inspection frequency correlates with the anticipated decrease in settlement per unit time. Additionally, the seeded vegetation should be well established after one year of growth which has been undisturbed by construction equipment and activity. Short inspections will also be performed after tropical storms, depressions or hurricanes occur which have the potential to cause excessive damage to the constructed remedy.

2.2 Grounds Inspection

The grounds to be inspected include all areas where construction or construction support activities occurred during the final revised remedial action. Figure 2.1 shows the area to be inspected.

The final cover system will be visually inspected to evaluate the integrity and effectiveness in draining surface run-off over the capped waste areas. The final cover system will be inspected for signs of erosion, exposure of the underlying geosynthetic materials, loss of vegetative cover and/or soil cover, differential elevations along the peak of the cover, and depressions or settlement which may restrict drainage or which may threaten the integrity of the final cover system. Inspection will include a visual reconnaissance to identify any obvious depressions or grade changes, areas where vegetation growth varies due to moist or silted soils, and evidence of ponded water. Depressions and grade reversals in the cover slope will be identified and located. Notes on the inspection reports will include the dimensions of areas of concern and estimates of

SITE PLAN
INSPECTON AREA



NORTH

NOTES:

1. DRAWING BASED ON PREVIOUS SITE TOPOGRAGHIC INFORMATION AND DESIGN DRAWINGS. DRAWING IS NOT BASED ON FINAL AS-BUILT DATA.
2. LOCATION OF EDGE OF WATER SHOWN IS THE LOCATION AT THE TIME OF SURVEY. WATER LEVELS SUBJECT TO TIDAL VARIATIONS. AVERAGE TIDE ELEVATIONS ARE: LOW TIDE – –2.0 FEET (MSL) AND HIGH TIDE +1.0 FEET (MSL). TIDE ELEVATIONS ARE SUBJECT TO VARIATION DEPENDING ON SEASON AND LOCAL WEATHER CONDITIONS.
3. RIPRAP LOCATED ON ALL SLOPES.
4. INSPECTION AREA TO INCLUDE, AS A MINIMUM,
   - NORTH DIKE CAP AREA
   - EAST DIKE CAP AREA
   - ALL AREAS OF RIP RAP
   - VISUAL OBSERVATION OF PERIMETER DIKES
   - ACCESS BRIDGE
   - SITE FENCING (FIGURE 2.2)

LEGEND – GENERAL

EXISTING CONTOUR (FEET)

ANCHOR TRENCH

APPROXIMATE LIMIT OF GRAVEL SURFACING

0 300
SCALE IN FEET

GeoSyntec Consultants
ATLANTA, GA

PROJECT NO. GE3913-620	FIGURE NO. 2.1
DOCUMENT NO.	FILE NO. 3913F004

the vertical extent of any settlement. The location, size, and extent of localized depressions of ponded water greater than 2 inches in depth will be documented. The reoccurrence of these depressions will be evaluated to determine whether any corrective action is required. The gas vents along the East and North Dikes will be inspected to ensure the vent screens remain intact and are not obstructed by any foreign debris or matter.

The 24-inch RCP culvert placed on the south side of Pond A will be checked for signs of blockage. Rip rap on the side slopes of both the North and East Dikes will be inspected for excessive movement due to tidal effects. The gas vents along the East and North Dikes will be inspected to ensure the vent screens remain intact and are not obstructed by any foreign debris or matter.

The breaches in the perimeter dikes will be inspected to ensure that there is free movement of water within the dike area.

2.3 Fence and Sign Inspection

The chain link fencing at the site entrance and along the east and south sides of the East Dike will be inspected for signs of excessive rust, holes, sagging, vandalism or other features which would render the fencing inadequate. A site map showing the location of the fencing and gates is shown in Figure 2.2. The site bridge gates will also be inspected for the same signs of deterioration and will be checked to verify that the locks are present and functioning. The site signs posted around the site will be inspected for signs of disturbance or vandalism.

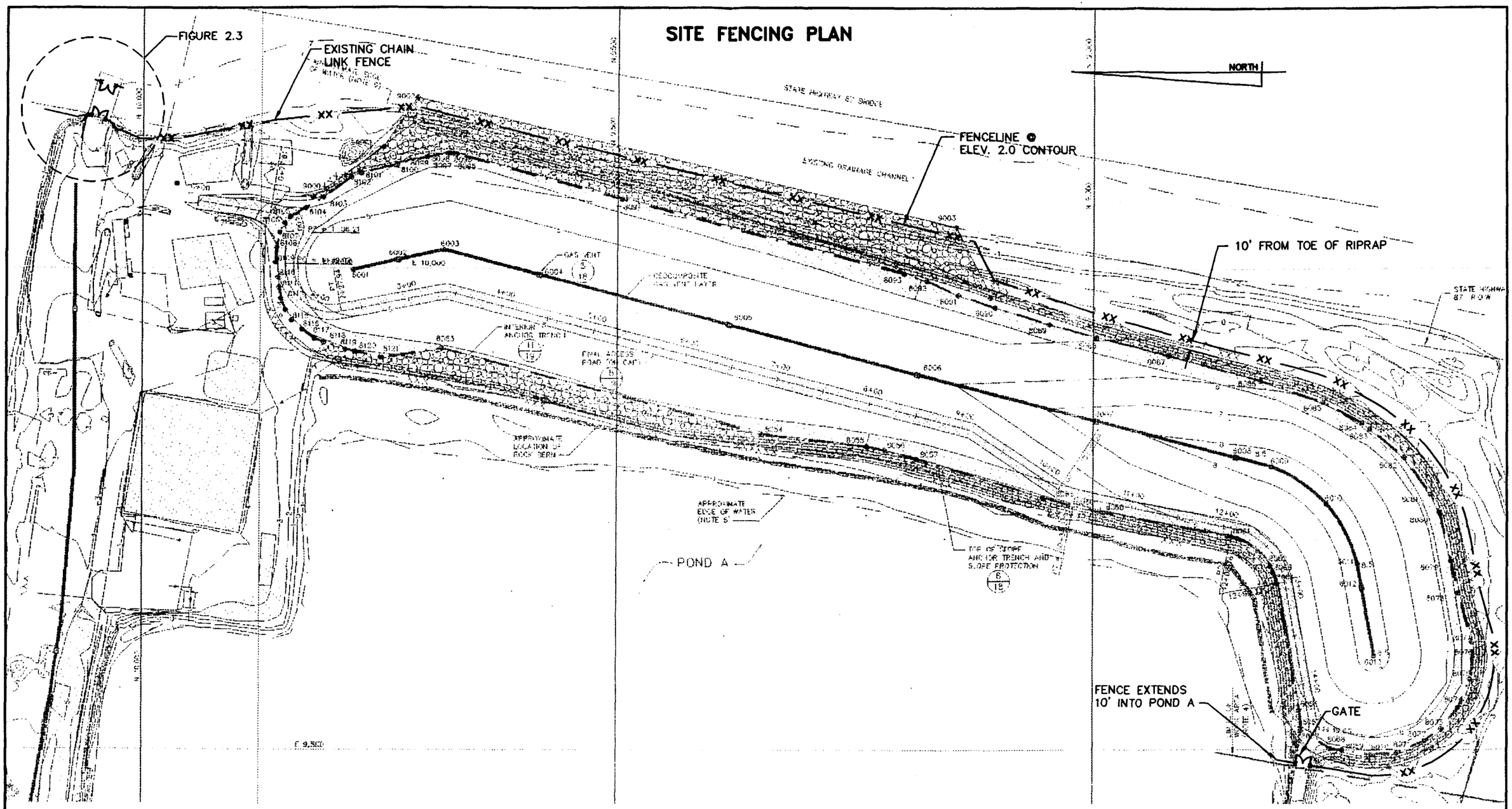
2.4 Site Access Bridge

The site access bridge shown in Figure 2.2 and 2.3 will be inspected routinely during site inspections. The bridge decking and handrails and the overall general condition of the bridge will be assessed. The bridge will be visually inspected to check if the bridge deck timbers are sound and that the shims are in their proper locations. In June 1996, the bridge was inspected and certified by a Professional Engineer. The findings of the certification are as follows: "The Site Access Bridge is designed for a HS20-44 loading (36 tons) and has been certified for loads not to exceed 100 tons.... Speeds on the bridge shall be limited to 5 MPH." Based on the results of the routine site inspections, re-certification of the bridge will be performed as deemed necessary using engineering judgement.

2.5 Road Inspection

The final access roads are to be used by lightweight vehicles to inspect and maintain the site. Lightweight vehicles are defined as vehicles with a gross weight of 3 tons or less and having at least 2 axles. Vehicles with a greater gross weight may be permitted provided that the axle load does not exceed 10 kips and the rut depth in the flexible base does not exceed 2 inches. Vehicles shall be driven along the centerline of the roadways and not be permitted closer than 2 feet to the edge of the flexible base roadway. Vehicles should not exceed a speed of five miles per hour when driving on the final access roads.

SITE FENCING PLAN



LEGEND

GATE

—— xx —— SECURITY FENCE

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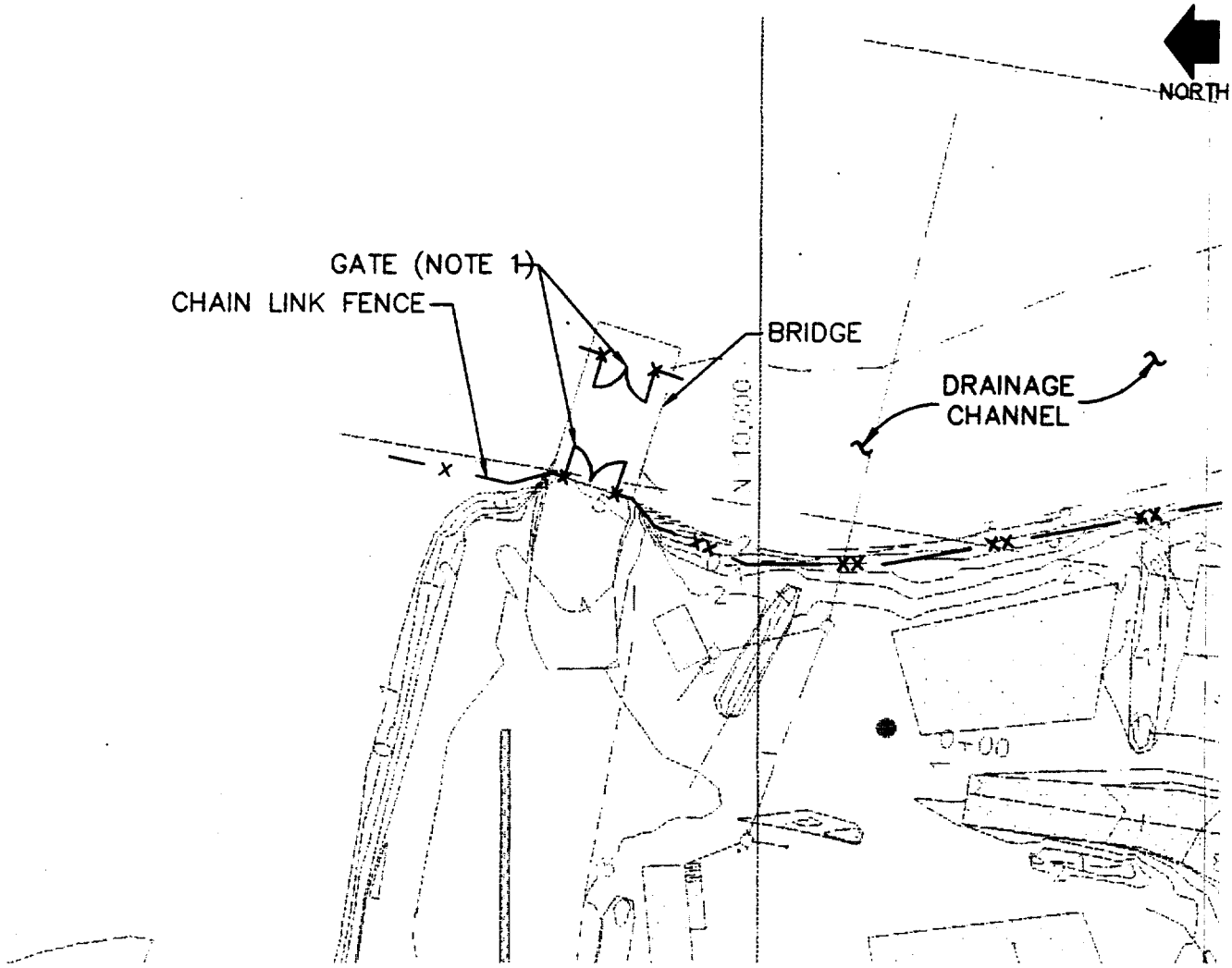
ATLANTA, GA

PROJECT NO. GE3913-620	FIGURE NO. 2.2
DOCUMENT NO.	FILE NO. 3913F006

GATE DETAIL AT SITE ACCESS BRIDGE



LEGEND

GATE

SECURITY FENCE

0 50

SCALE IN FEET

NOTE:

1. GATES TO BE SECURELY MOUNTED TO BRIDGE STRUCTURE.

GeoSyntec Consultants

ATLANTA, GEORGIA

FIGURE NO.	2.3
PROJECT NO.	GE3913-620
DOCUMENT NO.	
FILE NO.	3913F005

The entrance area and final access roads will be inspected for signs of rutting, potholes, erosion or features which could make these areas impassable.

2.6 Health and Safety

The existing Health and Safety plan for the site will be updated to incorporate site conditions which exist after completion of the final remedy. Routine maintenance and inspection activities will be covered in this plan. If activities other than routine maintenance activities are required at the site, the plan will be modified to cover these activities.

SECTION 3

3.0 SITE MAINTENANCE

After completing the site inspection, the BSSC or their agent will initiate and verify completion of any required maintenance. Depending on the type of the required maintenance, the time frame of its implementation will vary. Those areas that may receive attention are listed below.

3.1 Grounds Maintenance

The BSSC will have the capped area within its control mowed on a quarterly basis until completion of the IMM requirements. Mowing will be scheduled just prior to regularly scheduled inspections whenever possible. Depending on the results of the site inspection, more frequent mowing may be required. Regular maintenance includes mowing the capped area and providing additional seeding and fertilizing throughout the year, as needed. The area to be mowed includes the area between the fence and the toe of the rip rap along the southern half of the East Dike. Trimming of weeds and growth along the toe of the rip rap for all areas will be performed, especially in areas where the anchor trench is located at the toe of the slope (for example, the north slope of North Dike). Removal of vegetation growth in the rip rap will be performed. Vegetation growth in the gas vent mower barriers will also be removed. All trees and sapling growths will be removed during mowing events to prevent deep root growth. Excessive loss or settlement of rip rap along the side/slopes will be replaced as necessary to maintain the integrity of the constructed remedy.

If required, the BSSC will arrange for repairs to erosional damage or settlement as necessary to maintain the integrity of the cap as constructed. Prior to any repairs, each area repaired should be fully documented so that trends can be established. If major settlement occurs or settlement continues in one area, further work will be performed to document conditions and determine future impacts on cap integrity. This could include the establishment of survey benchmarks and monitoring of elevations in areas where excessive settlement is noted in order to monitor the rate of settlement. The amount and frequency of surveying will be dependent on the site conditions present. It is anticipated that this data will be used to evaluate the corrective action to be taken.

Obstructions to the gas vents will be removed. Gas vent screens will be repaired or replaced, if necessary.

Breaches in the perimeter dike will be cleared of accumulated silt, if free movement of water within the dike area is obstructed.

3.2 Fence Maintenance

The BSSC will arrange for the repair, as necessary, of required fences within its control (shown in Figure 2.2).

3.3 Sign Maintenance

Posted site signs will be maintained such that they are visible and legible. Surrounding brush and grass will be trimmed so that signs are not obscured.

3.4 Site Access Bridge Maintenance

Any loose or protruding boards in the site access bridge will be repaired or replaced. The bridge handrails will be repaired. Any sharp objects such as nails along the bridge driveway will be removed or flattened.

3.5 Road Maintenance

Significant accumulation of dirt, unwanted vegetation, and other debris will be removed from the final access roads as needed. All ruts and potholes shall be filled in with additional flexible base material. Flexible base material for access roads shall meet all the requirements of the Texas Highway Department Standard Specification Item 247, Type A, Grade 2 flexible base. Regrading of the roadway should not be performed on sections of the roadway located over the synthetic cover system. Material shall be placed and compacted in a manner that promotes rainfall runoff from the roadway surface.

SECTION 4

4.0 EQUIPMENT

The equipment that may be required to be utilized for site maintenance for a period of 30 years includes:

a) A mower for mowing the capped area;

b) Weed-wacker or other equipment to trim vegetation near signs or gas vents;

c) Site grading equipment for repairing any erosion; and

d) Fence and sign repair equipment and supplies.

The ground bearing pressure on the capped area is of the utmost importance to the integrity of the light weight geosynthetic composite cap. Thus, no equipment regardless of its weight, will be allowed on the capped areas of the site if it creates more than a 2-inch rut in the protective soil. If ruts greater than 2 inches are observed, the equipment shall cease operation immediately and ruts backfilled and regraded. Mowing and other maintenance activities will be scheduled under dry site conditions.

It is anticipated that the maintenance will be provided as the need arises by subcontractors hired by the BSSC or its successors or assigns; therefore, it will not be necessary to store, maintain or replace equipment on the site.

SECTION 5

5. RECORDS AND REPORTING

The BSSC will prepare a quarterly report for the first year and annual reports for years 2 through 5. If necessary, biennial reports for years 6 through 11, and one report every 5 years thereafter up to 30 years will be prepared, as required for submittal to EPA. The reports will include the date and time of inspections, name of inspector, site observations, grid or map locations of any problems, maintenance recommendations and activities, and corrective measures. Such information will be documented in logs by the BSSC or their agent during periodic inspections and/or maintenance activities.

SECTION 6

6.0 COSTS

The costs associated with site maintenance will vary according to the task performed. A visual inspection of the site will be made every quarter during the first year and annually thereafter for years two through five.

Table 6.1 presents an estimated budget for inspection, maintenance, and monitoring of the site for the first year. The budget (based on fixed dollar value) for years 2-5, and, if necessary, 6-10, and 11-30 are in Tables 6.2, 6.3, and 6.4, respectively. Inflation has not been incorporated into the cost estimate. Costs are to be used for budgetary purposes and are subject to change based on specific maintenance needs which may be encountered at the site over the duration of the inspection, maintenance and monitoring period.

TABLE 6.1

MAINTENANCE BUDGET
FOR FIRST YEAR

ACTIVITY	DESCRIPTION OF WORK	FREQUENCY OF PERFORMANCE	APPROXIMATE TIME REQUIRED	UNIT COST	TOTAL ANNUAL COST
Inspection of Site	Inspector walks the entire site looking for signs of deterioration as described herein.	4/year	1 day	$750	$3,000
	Short visits to check site security and after-storm inspections.	8/year (or as needed)	1/2 day	$220	$1,760
Grounds Maintenance	Initial Re-seeding	1/year (if needed)	1 day	$15,000	$15,000
	Mow grass growing on the capped areas.	4/year	1 day	$950	$3,800
	Erosion repair.	4/year (or as needed)		$1,100	$4,400
Fence and Sign Repair	Repair fences and gates on the property line.	1/year (or as needed)	1 day	$3,000	$3,000
	Repair posted signs around the property. Remove vegetation obstructing signs.				
Bridge Maintenance	Repair or replace bridge decking and handrails.	0	0	0	0
	Engineer's certification.	1/year (or as needed)	1 day	$1,000	$1,000
Road Maintenance	Repair final access roads.	1/year (or as needed)	1 day	$1,400	$1,400
Quarterly Report Submittal	A quarterly report detailing observations and the maintenance work done on the site.	4/year	1 day/RPT	$1,500	$6,000
Oversight of Contractor	Manage subcontractor, provide quality control, report to BSSC.	As required throughout the year.	First year	$10,000	$10,000
				ANNUAL TOTAL	**$49,360**

TABLE 6.2

MAINTENANCE BUDGET
YEARS 2 TO 5

ACTIVITY	DESCRIPTION OF WORK	FREQUENCY OF PERFORMANCE	APPROXIMATE TIME REQUIRED	UNIT COST[1]	TOTAL ANNUAL COST
Inspection of Site	Inspector walks the entire site looking for signs of deterioration as described herein.	1/year	1 day	$750	$750
	Short visits to check site security and after-storm inspections.	8/year (or as needed)	1/2 day	$220	$1,760
Grounds Maintenance	Mow grass growing on the capped areas.	4/year	1 day	$950	$3,800
	Erosion repair.	1.5/year (or as needed)	1 day	$1,100	$1,650
Fence and Sign Repair	Repair fences and gates on the property line. Repair posted signs around the property. Remove vegetation obstructing signs.	1/year (or as needed)	1 day	$3,000	$3,000
Bridge Maintenance	Repair or replace bridge decking and handrails.	1/year (or as needed)	1 day	$1,500	$1,500
Road Maintenance	Repair final access roads.	1/year (or as needed)	1 day	$1,400	$1,400
Report Submittal	An annual report detailing the observations and maintenance work done on the site.	1/year	1 day	$2,000	$2,000
Oversight of Contractor	Manage subcontractor, provide quality control, report to BSSC.	As required throughout the year.	Years 2-5	$10,000	$10,000
				ANNUAL TOTAL	**$25,860**
				TOTAL FOR YEARS 2 - 5	**$103,440**

[1] 1997 Dollars (No inflation considered.)

TABLE 6.3

MAINTENANCE BUDGET
YEARS 6 TO 10 (if necessary)

ACTIVITY	DESCRIPTION OF WORK	FREQUENCY OF PERFORMANCE	APPROXIMATE TIME REQUIRED	UNIT COST[1]	TOTAL COST
Inspection of Site	Inspector walks the entire site looking for signs of deterioration as described herein.	3/5 years	1 day	$750	$2,250
	Short visits to check site security and after-storm inspections.	40/5 years (or as needed)	1/2 day	$220	$8,800
Grounds Maintenance	Mow grass growing on the capped areas.	20/5 years	1 day	$950	$19,000
	Erosion repair.	3/5 years (or as needed)	1 day	$1,100	$3,300
Fence and Sign Repair	Repair fences and gates on the property line.	2/5 years (or as needed)	1 day	$3,000	$6,000
	Repair posted signs around the property. Remove vegetation obstructing signs.				
Bridge Maintenance	Repair or replace bridge decking and handrails.	3/5 years	1 day	$1,500	$4,500
	Engineer's certification.	1/5 years (or as needed)	1 day	$1,000	$1,000
Road Maintenance	Repair final access roads.	3/5 years (or as needed)	1 day	$1,400	$4,200
Report Submittal	A report detailing the observations and maintenance work done on the site.	3/5 years (years 6 through 11)	1 day	$2,000	$6,000
Oversight of Contractor	Manage subcontractor, provide quality control, report to BSSC.	As required throughout the year.	Years 6-10	$8,000	$40,000
				TOTAL COST	**$95,050**
				AVERAGE ANNUAL COST OVER 5 YEARS	**$19,010**

[1] 1997 Dollars (No inflation considered.)

TABLE 6.4

MAINTENANCE BUDGET
YEARS 11 TO 30 (if necessary)

ACTIVITY	DESCRIPTION OF WORK	FREQUENCY OF PERFORMANCE	APPROXIMATE TIME REQUIRED	UNIT COST[1]	TOTAL COST
Inspection of Site	Inspector walks the entire site looking for signs of deterioration as described herein.	1/5 years	1 day	$750	$3,000
	Short visits to check site security and after-storm inspections.	40/5 years (or as needed)	1/2 day	$220	$35,200
Grounds Maintenance	Mow grass growing on the capped areas.	20/5 years	1 day	$950	$76,000
	Erosion repair.	3/5 years (or as needed)	1 day	$1,100	$13,200
Fence and Sign Repair	Repair fences and gates on the property line	3/5 years (or as needed)	1 day	$3,000	$36,000
	Repair posted signs around the property. Remove vegetation obstructing signs.		1 day		
Bridge Maintenance	Repair or replace bridge decking and handrails.	2/5 years	1 day	$1,500	$12,000
	Engineer's certification.	1/5 years (or as needed)	1 day	$1,000	$4,000
Road Maintenance	Repair final access roads.	2/5 years (or as needed)	1 day	$1,400	$11,200
Report Submittal	A report detailing the observations and maintenance work done on the site.	1/5 years (years 11 through 30)	1 day	$2,000	$8,000
Oversight of Contractor	Manage subcontractor, provide quality control, report to BSSC.	As required throughout the year.	Years 11-30	$5,000	$100,000
				TOTAL COST	**$298,600**
				AVERAGE ANNUAL COST OVER 20 YEARS	**$14,930**

[1] 1997 Dollars (No inflation considered.)